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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,538	12/09/2003	Peter V. Uribarri	2433-000001	4561

27572 7590 01/10/2007
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EXAMINER	
BRUENJES, CHRISTOPHER P	
ART UNIT	**PAPER NUMBER**
1772	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)
	10/731,538	URIBARRI, PETER V.
	Examiner	**Art Unit**
	Christopher P. Bruenjes	1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-24 and 26-30* is/are pending in the application.

4a) Of the above claim(s) *28-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-24,26-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

WITHDRAWN REJECTIONS

1. The 35 U.S.C. 112 rejections of claims 1-6, 8-24, and 26-27 of record in the Office Action mailed July 21, 2006, Page 3 Paragraph 4, have been withdrawn due to Applicant's amendments in the Paper filed October 23, 2006.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-2, 4-5, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al (USPN 5,556,495) in view of Schnegg (USPN 5,191,777), Woodall, Jr. (USPN 3,882,857), and Vowles et al (USPN 4,938,907).

Ford et al teach an abrasion resistant wiring, cable and/or tubing cover (col.1, l.11-15). Ford et al further teach that the fabric is preferably woven and possess excellent flexibility and exceptional kink and abrasion resistance (col.2, l.45-51) and is formed of polyamide or polyester (col.5, l.10-22). The fabric cloth is heat set into a resilient and abrasion-resistant wiring, cable, and/or tubing cover.

Ford et al fail to teach that the first and second weft yarns are in a non-spiral configuration. However, Ford et al teach that it is well known in the art to form tubular sleeves with the longitudinal yarns being substantially parallel to the longitudinal axis and not spirally configured (col.1, l.40-44). Ford et al goes on to teach that providing the tubular fabric with spirally set filaments provide enhanced flexibility and kink and abrasion resistance (col.2, l.45-51). However, it would have been obvious to one having ordinary skill in the art that adding the step of spirally setting the longitudinal

filaments would add to the cost and complexity of the formation of the tubular fabric, and that if the increased flexibility, kink resistance and abrasion resistance were not required, the particular step of spirally setting the longitudinal filaments would be eliminated in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Therefore, it would have been obvious to on having ordinary skill in the art at the time Applicant's invention was made to form the longitudinal filaments of Ford et al as with a non-spiral configuration rather than a spiral configuration in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Ford et al fail to teach the fabric cloth being made by knitting the particular filaments claimed. However, Schnegg teaches forming a weft inserted, warp knit, which is crochet, to substitute for woven fabrics because the weft inserted warp knit fabric described maintains the desirable characteristics and stability of woven fabrics while increasing the speed of production and the ability to use inferior yarn (col.2, l.21-33). The preferred embodiment taught by Schnegg includes a monofilament yarn forming a first weft in a fabric cloth, a first multifilament yarn forming a second weft in said fabric cloth, a set of placed warps of third multifilament yarns

forming a lay-in stitch lap (col.6, l.59-66), and knitted warps of second multifilament yarns forming a chain stitch lap (col.7, l.4-13). The monofilament yarn is selected from the group consisting of polyester and polyamide (col.10, l.9-20). Schnegg teaches that the weft yarns "may" be cut at the width edges of the fabric. By stating "may" Schnegg creates two embodiments one in which the weft yarns are cut and one in which the weft yarns are left uncut. One of ordinary skill in the art would have recognized that a weft inserted, warp knit is substituted for a woven fabric in order to provide the fabric with the same or similar physical properties and stability while being produced faster and with less expensive materials, as taught by Schnegg.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute a weft inserted, warp knit as described in Schnegg for the woven fabric of Ford et al, in order to produce a fabric having the same or equivalent physical properties and stability as the woven fabric faster and with cheaper starting materials, as taught by Schnegg.

Ford et al and Schnegg taken as a whole teach all that is shown above and teach that the yarns are formed from polyamide or polyester. Ford et al and Schnegg fail to teach that the

multifilament yarns are textured. However, Woodall teaches that yarns are textured or bulked in order to provide the fabric formed form the yarn with enhanced cushion. Therefore, one of ordinary skill in the art would have recognized that the abrasion-resistant tubular sleeve of Ford et al and Schnegg is used to protect wires, cables, and/or conduits and that added cushion and thickness of the tubular sleeve would add protection to the wires, cables, and/or conduits being covered.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to texture or bulk the multifilament yarns of Ford et al and Schnegg in order to provide the fabric with enhanced cushion, as taught by Woodall.

Ford et al, Schnegg, and Woodall taken as a whole fail to teach that the set of knitted warps perpendicular to the longitudinal axis have fused ends. However, Vowles et al teach that tubular fabric sleeving used in the electronic industry as a protective covering for wires is manufactured in bulk in very long lengths and must therefore be cut into predetermined lengths prior to use. Because the fabric is woven or braided, if the cut end is left untreated it frays. Accordingly, it is highly desirable to not only cut the sleeve to the predetermined lengths but also fuse the cut ends to prevent fraying (col.1,

1.10-22). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of knitted warps in order to prevent fraying, as taught by Vowles et al.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of the wiring, cable, and/or tubing cover of the combined teachings of Ford et al, Schnegg, and Woodall, to prevent fraying that is caused by cut fabrics into their predetermined lengths prior to use, as taught by Vowles et al.

5. Claims 3, 6, 9, 13-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford, Schnegg, Woodall, Jr., and Vowles as applied to claims 1-2, 5, 8, and 12 above, and further in view of Boyd et al (US 2005/0017402 A1).

Regarding claims 3, 6, 9, and 13-14, Ford et al, Schnegg, Woodall, and Vowles teach all that is claimed in claims 1-2, 5, 8, and 12 as shown above, but fail to teach that the multifilament yarn is formed of Nylon 6/6 having the claimed denier. The denier of the multifilament is not specifically taught in Boyd et al, however, it would have been obvious to one having ordinary skill in the art to select the denier through routine experimentation depending on the intended end result of

the fabric, absent the showing of unexpected result. However, Boyd et al teach that Nylons and specifically Nylon 6/6 is well known for its toughness and abrasion resistance (p.5, paragraphs 41 and 42). One of ordinary skill in the art would have recognized that Nylon 6/6 is a material that is well known in the art for having superior abrasion resistance, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select Nylon 6/6 as the material used to form the first weft in the fabric cloth of Ford et al and Schnegg, because Ford et al teaches an abrasion resistant tubular sleeve and Boyd et al teaches that is well known in the art that Nylon 6/6 has superior abrasion resistance.

Claims 16-17 teach all of the limitations taught in claims 3, 6, and 9 combined, which are all taught by Ford et al, Schnegg, Woodall, and Boyd et al as shown above.

Regarding claim 18, Boyd et al teach that it is well known in the art to form monofilament yarns having a Nylon 6/6 core or sheath and a polyester core or sheath respectively in order to form a filament that has improved properties over a single component monofilament. Nylon is specifically chosen because it has excellent abrasion resistance and toughness and the

polyester is added in order to provide the monofilament with greater dimensional stability (p.1, paragraph 8). One of ordinary skill in the art would have recognized that a monofilament yarn used in the formation of an abrasion-resistant fabric would include an inner core of Nylon 6/6 and an outer shell of polyester in order to provide the filament with excellent abrasion resistance without sacrificing dimensional stability, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the monofilament of Ford et al, Schnegg, Woodall, and Vowles having an inner core of Nylon 6/6 and an outer shell of polyester, in order to form the monofilament having excellent abrasion resistance with enhanced dimensional stability compared to a single component Nylon 6/6 monofilament, as taught by Boyd et al.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ford, Schnegg, Woodall, Jr., and Vowles as applied to claim 1 above, and further in view of Keogh (US 2002/0098357).

Ford, Schnegg, Woodall, Jr., and Vowles taken as a whole teach all that is claimed in claim 1, but fails to explicitly

teach that the yarns are treated with a flame-retardant composition to provide a self-extinguishing, no-burn-rate tubular sleeve. However, Keogh teaches that protective wraps for cables and wires are formed to be flame retardant because the wires and cables provide ready transport of flame unless the protective wraps are flame retardant (p.1, paragraph 3). Keogh teaches that materials such as PVC, PVDF, and FEP are conventionally used to provide flame retardance in protective wraps, but they are expensive and/or produce toxic and corrosive gases when exposed to flame (p.1, paragraphs 9-11). Therefore, Keogh teaches that other materials that are not inherently flame retardant are treated with a flame-retardant composition in order to provide a protective wrap that prevents flame spread and does not produce significant quantities of dense combustion smoke or toxic and corrosive combustion gases while still using inexpensive polymeric materials (p.2, paragraphs 13-18). One of ordinary skill in the art would have recognized that tubular sleeves for protecting cords and wires are treated with flame-retardant compositions in order to provide the sleeve with flame retardance necessary to prevent flame spread along the length of the wires and cables without resorting to materials that are expensive and/or produce toxic and corrosive combustion smoke, as taught by Keogh.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to treat the yarns of Ford, Schnegg, Woodall, Jr., and Vowles with a flame retardant composition in order to render the tubular sleeve flame retardant without using materials that are expensive or produce toxic and corrosive combustion smoke when exposed to a flame, as taught by Keogh.

7. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al in view of Schnegg, Woodall, Vowles et al, Keogh, and Stanhope et al (USPN 5,556,495).

Ford et al teach an abrasion resistant wiring, cable and/or tubing cover (col.1, l.11-15). Ford et al further teach that the fabric is preferably woven and possess excellent flexibility and exceptional kink and abrasion resistance (col.2, l.45-51) and is formed of polyamide or polyester (col.5, l.10-22). The fabric cloth is heat set into a resilient and abrasion-resistant wiring, cable, and/or tubing cover.

Ford et al fail to teach that the first and second weft yarns are in a non-spiral configuration. However, Ford et al teach that it is well known in the art to form tubular sleeves with the longitudinal yarns being substantially parallel to the longitudinal axis and not spirally configured (col.1, l.40-44).

Ford et al goes on to teach that providing the tubular fabric with spirally set filaments provide enhanced flexibility and kink and abrasion resistance (col.2, l.45-51). However, it would have been obvious to one having ordinary skill in the art that adding the step of spirally setting the longitudinal filaments would add to the cost and complexity of the formation of the tubular fabric, and that if the increased flexibility, kink resistance and abrasion resistance were not required, the particular step of spirally setting the longitudinal filaments would be eliminated in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Therefore, it would have been obvious to on having ordinary skill in the art at the time Applicant's invention was made to form the longitudinal filaments of Ford et al as with a non-spiral configuration rather than a spiral configuration in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Ford et al fail to teach the fabric cloth being made by knitting the particular filaments claimed. However, Schnegg teaches forming a weft inserted, warp knit to substitute for woven fabrics because the weft inserted warp knit fabric described maintains the desirable characteristics and stability of woven fabrics while increasing the speed of production and

the ability to use inferior yarn (col.2, l.21-33). The preferred embodiment taught by Schnegg includes a monofilament yarn forming a first weft in a fabric cloth, a first multifilament yarn forming a second weft in said fabric cloth, a set of placed warps of third multifilament yarns forming a lay-in stitch lap (col.6, l.59-66), and knitted warps of second multifilament yarns forming a chain stitch lap (col.7, l.4-13). The monofilament yarn is selected from the group consisting of polyester and polyamide (col.10, l.9-20). One of ordinary skill in the art would have recognized that a weft inserted, warp knit is substituted for a woven fabric in order to provide the fabric with the same or similar physical properties and stability while being produced faster and with less expensive materials, as taught by Schnegg.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute a weft inserted, warp knit as described in Schnegg for the woven fabric of Ford et al, in order to produce a fabric having the same or equivalent physical properties and stability as the woven fabric faster and with cheaper starting materials, as taught by Schnegg.

Ford et al and Schnegg fail to teach that the multifilament yarns are textured. However, Woodall teaches that yarns are

textured or bulked in order to provide the fabric formed form the yarn with enhanced cushion. The denier of the multifilament is not specifically taught, however, it would have been obvious to one having ordinary skill in the art to select the denier through routine experimentation depending on the intended end result of the fabric, absent the showing of unexpected result. One of ordinary skill in the art would have recognized that the abrasion-resistant tubular sleeve of Ford et al and Schnegg is used to protect wires, cables, and/or conduits and that added cushion and thickness of the tubular sleeve would add protection to the wires, cables, and/or conduits being covered.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to texture or bulk the multifilament yarns of Ford et al and Schnegg in order to provide the fabric with enhanced cushion, as taught by Woodall.

Ford et al, Schnegg, and Woodall taken as a whole fail to teach that the set of knitted warps perpendicular to the longitudinal axis have fused ends. However, Vowles et al teach that tubular fabric sleeving used in the electronic industry as a protective covering for wires is manufactured in bulk in very long lengths and must therefore be cut into predetermined lengths prior to use. Because the fabric is woven or braided,

if the cut end is left untreated it frays. Accordingly, it is highly desirable to not only cut the sleeve to the predetermined lengths but also fuse the cut ends to prevent fraying (col.1, l.10-22). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of knitted warps in order to prevent fraying, as taught by Vowles et al.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of the wiring, cable, and/or tubing cover of the combined teachings of Ford et al, Schnegg, and Woodall, to prevent fraying that is caused by cut fabrics into their predetermined lengths prior to use, as taught by Vowles et al.

Ford et al, Schnegg, Woodall, and Vowles teach that the yarns are made of polyester, but fail to teach that the polyester is flame retardant polyester. However, Keogh teaches that the materials used to form a tubular sleeve for protecting wires and cables should be flame retardant because wires and cables readily transport flame in the event of a fire unless the tubular sleeve protecting the wires and cables are formed of flame retardant materials (p.1, paragraph 3). Stanhope et al teach that a well known flame retardant yarn used in the art is flame retardant polyester (p.2, paragraph 25). One of ordinary

skill in the art would have recognized that Ford et al, Schnegg, Woodall, Vowles teach that the yarns used in forming the tubular sleeve are formed of polyester, that wire protective sleeves should be flame retardant, as taught by Keogh, and that flame resistant polyester is a flame retardant yarn that would render the tubular sleeve flame retardant, as taught by Stanhope et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select flame retardant polyester as taught in Stanhope et al as the polyester yarn used in Ford et al, Schnegg, Woodall, and Vowles, in order to render the protective sleeve flame retardant so as to prevent the transport of flame along the wires and cables, as taught by Keogh.

8. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al in view of Schnegg, Woodall, Vowles et al, Boyd et al, Keogh, and Stanhope et al.

Ford et al teach an abrasion resistant wiring, cable and/or tubing cover (col.1, l.11-15). Ford et al further teach that the fabric is preferably woven and possess excellent flexibility and exceptional kink and abrasion resistance (col.2, l.45-51) and is formed of polyamide or polyester (col.5, l.10-22). The

fabric cloth is heat set into a resilient and abrasion-resistant wiring, cable, and/or tubing cover.

Ford et al fail to teach that the first and second weft yarns are in a non-spiral configuration. However, Ford et al teach that it is well known in the art to form tubular sleeves with the longitudinal yarns being substantially parallel to the longitudinal axis and not spirally configured (col.1, l.40-44). Ford et al goes on to teach that providing the tubular fabric with spirally set filaments provide enhanced flexibility and kink and abrasion resistance (col.2, l.45-51). However, it would have been obvious to one having ordinary skill in the art that adding the step of spirally setting the longitudinal filaments would add to the cost and complexity of the formation of the tubular fabric, and that if the increased flexibility, kink resistance and abrasion resistance were not required, the particular step of spirally setting the longitudinal filaments would be eliminated in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Therefore, it would have been obvious to on having ordinary skill in the art at the time Applicant's invention was made to form the longitudinal filaments of Ford et al as with a non-spiral configuration rather than a spiral configuration in order

to eliminate the increased cost and complexity caused by the spirally set filaments.

Ford et al fail to teach the fabric cloth being made by knitting the particular filaments claimed. However, Schnegg teaches forming a weft inserted, warp knit to substitute for woven fabrics because the weft inserted warp knit fabric described maintains the desirable characteristics and stability of woven fabrics while increasing the speed of production and the ability to use inferior yarn (col.2, l.21-33). The preferred embodiment taught by Schnegg includes a monofilament yarn forming a first weft in a fabric cloth, a first multifilament yarn forming a second weft in said fabric cloth, a set of placed warps of third multifilament yarns forming a lay-in stitch lap (col.6, l.59-66), and knitted warps of second multifilament yarns forming a chain stitch lap (col.7, l.4-13). The monofilament yarn is selected from the group consisting of polyester and polyamide (col.10, l.9-20). One of ordinary skill in the art would have recognized that a weft inserted, warp knit is substituted for a woven fabric in order to provide the fabric with the same or similar physical properties and stability while being produced faster and with less expensive materials, as taught by Schnegg.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute a weft inserted, warp knit as described in Schnegg for the woven fabric of Ford et al, in order to produce a fabric having the same or equivalent physical properties and stability as the woven fabric faster and with cheaper starting materials, as taught by Schnegg.

Ford et al and Schnegg fail to teach that the multifilament yarns are textured. However, Woodall teaches that yarns are textured or bulked in order to provide the fabric formed form the yarn with enhanced cushion. One of ordinary skill in the art would have recognized that the abrasion-resistant tubular sleeve of Ford et al and Schnegg is used to protect wires, cables, and/or conduits and that added cushion and thickness of the tubular sleeve would add protection to the wires, cables, and/or conduits being covered.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to texture or bulk the multifilament yarns of Ford et al and Schnegg in order to provide the fabric with enhanced cushion, as taught by Woodall.

Ford et al, Schnegg, and Woodall taken as a whole fail to teach that the set of knitted warps perpendicular to the

longitudinal axis have fused ends. However, Vowles et al teach that tubular fabric sleeving used in the electronic industry as a protective covering for wires is manufactured in bulk in very long lengths and must therefore be cut into predetermined lengths prior to use. Because the fabric is woven or braided, if the cut end is left untreated it frays. Accordingly, it is highly desirable to not only cut the sleeve to the predetermined lengths but also fuse the cut ends to prevent fraying (col.1, l.10-22). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of knitted warps in order to prevent fraying, as taught by Vowles et al.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of the wiring, cable, and/or tubing cover of the combined teachings of Ford et al, Schnegg, and Woodall, to prevent fraying that is caused by cut fabrics into their predetermined lengths prior to use, as taught by Vowles et al.

Ford et al, Schnegg, Woodall, and Vowles fail to teach that the multifilament yarns are formed of NOMEX/BASOFIL blend having the claimed denier, and that the monofilament is formed of polyphenylene sulfide. The denier of the multifilament is not specifically taught, however, it would have been obvious to one

having ordinary skill in the art to select the denier through routine experimentation depending on the intended end result of the fabric, absent the showing of unexpected result. Keogh teaches that the materials used to form a tubular sleeve for protecting wires and cables should be flame retardant because wires and cables readily transport flame in the event of a fire unless the tubular sleeve protecting the wires and cables are formed of flame retardant materials (p.1, paragraph 3). Boyd et al teach that a well known inherently flame retardant yarn used in the art is polyphenylene sulfide, because it is flame retardant and has outstanding chemical and thermal resistance (p.5, paragraph 35). One of ordinary skill in the art would have recognized that that wire protective sleeves should be flame retardant, as taught by Keogh, and that polyphenylene sulfide is a flame retardant yarn that would render the tubular sleeve flame retardant and possesses outstanding chemical and thermal resistance, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select polyphenylene sulfide as taught in Boyd et al as the monofilament yarn used in Ford et al, Schnegg, Woodall, and Vowles in order to render the protective sleeve flame retardant

so as to prevent the transport of flame along the wires and cables, as taught by Keogh.

Furthermore, Stanhope et al teach that in addition to single component yarns that are flame retardant such as the monofilament yarn of polyphenylene sulfide taught by Keogh, hybrid strands are formed of multifilament yarns in which spun yarns are used to provide flame retardance and filaments yarns are used to provide increased strength and abrasion resistance (p.1, paragraph 7). The spun yarns are formed from a group including melamine, which is the generic name of BASOFIL, and the filament yarns forming the multifilament yarn are formed from a group including NOMEX (p.3, paragraphs 30 and 31). One of ordinary skill in the art would have recognized that an abrasion resistant tubular sleeve such as the sleeve of Ford et al, Schnegg, and Woodall, would desire a material that improves abrasion resistance, and that tubular sleeves used in wire protection should be flame retardant in order to prevent transport of flame during a fire, as taught by Keogh.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the textured multifilament yarns of Ford et al, Schnegg, Woodall, and Vowles from a blend of NOMEX and melamine, such as BASOFIL, in order to provide a yarn that is flame

retardant in order to prevent the transport of flame during a fire, as taught by Keogh, while increasing abrasion resistance, as taught by Stanhope et al, which is desired by Ford et al.

9. Claims 24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford et al in view of Schnegg, Woodall, Jr., Vowles et al, Boyd et al, and Bettcher et al (USPN 5,070,540).

Ford et al teach an abrasion resistant wiring, cable and/or tubing cover (col.1, l.11-15). Ford et al further teach that the fabric is preferably woven and possess excellent flexibility and exceptional kink and abrasion resistance (col.2, l.45-51) and is formed of polyamide or polyester (col.5, l.10-22). The fabric cloth is heat set into a resilient and abrasion-resistant wiring, cable, and/or tubing cover.

Ford et al fail to teach that the first and second weft yarns are in a non-spiral configuration. However, Ford et al teach that it is well known in the art to form tubular sleeves with the longitudinal yarns being substantially parallel to the longitudinal axis and not spirally configured (col.1, l.40-44). Ford et al goes on to teach that providing the tubular fabric with spirally set filaments provide enhanced flexibility and kink and abrasion resistance (col.2, l.45-51). However, it

would have been obvious to one having ordinary skill in the art that adding the step of spirally setting the longitudinal filaments would add to the cost and complexity of the formation of the tubular fabric, and that if the increased flexibility, kink resistance and abrasion resistance were not required, the particular step of spirally setting the longitudinal filaments would be eliminated in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Therefore, it would have been obvious to on having ordinary skill in the art at the time Applicant's invention was made to form the longitudinal filaments of Ford et al as with a non-spiral configuration rather than a spiral configuration in order to eliminate the increased cost and complexity caused by the spirally set filaments.

Ford et al fail to teach the fabric cloth being made by knitting the particular filaments claimed. However, Schnegg teaches forming a weft inserted, warp knit to substitute for woven fabrics because the weft inserted warp knit fabric described maintains the desirable characteristics and stability of woven fabrics while increasing the speed of production and the ability to use inferior yarn (col.2, l.21-33). The preferred embodiment taught by Schnegg includes a monofilament yarn forming a first weft in a fabric cloth, a first

multifilament yarn forming a second weft in said fabric cloth, a set of placed warps of third multifilament yarns forming a lay-in stitch lap (col.6, l.59-66), and knitted warps of second multifilament yarns forming a chain stitch lap (col.7, l.4-13). The monofilament yarn is selected from the group consisting of polyester and polyamide (col.10, l.9-20). One of ordinary skill in the art would have recognized that a weft inserted, warp knit is substituted for a woven fabric in order to provide the fabric with the same or similar physical properties and stability while being produced faster and with less expensive materials, as taught by Schnegg.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute a weft inserted, warp knit as described in Schnegg for the woven fabric of Ford et al, in order to produce a fabric having the same or equivalent physical properties and stability as the woven fabric faster and with cheaper starting materials, as taught by Schnegg.

Ford et al and Schnegg taken as a whole teach all that is shown above and teach that the yarns are formed from polyamide or polyester. Ford et al and Schnegg fail to teach that the multifilament yarns are textured. However, Woodall teaches that yarns are textured or bulked in order to provide the fabric

formed form the yarn with enhanced cushion. Therefore, one of ordinary skill in the art would have recognized that the abrasion-resistant tubular sleeve of Ford et al and Schnegg is used to protect wires, cables, and/or conduits and that added cushion and thickness of the tubular sleeve would add protection to the wires, cables, and/or conduits being covered.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to texture or bulk the multifilament yarns of Ford et al and Schnegg in order to provide the fabric with enhanced cushion, as taught by Woodall.

Ford et al, Schnegg, and Woodall taken as a whole fail to teach that the set of knitted warps perpendicular to the longitudinal axis have fused ends. However, Vowles et al teach that tubular fabric sleeving used in the electronic industry as a protective covering for wires is manufactured in bulk in very long lengths and must therefore be cut into predetermined lengths prior to use. Because the fabric is woven or braided, if the cut end is left untreated it frays. Accordingly, it is highly desirable to not only cut the sleeve to the predetermined lengths but also fuse the cut ends to prevent fraying (col.1, l.10-22). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was

made to fuse the ends of knitted warps in order to prevent fraying, as taught by Vowles et al.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to fuse the ends of the wiring, cable, and/or tubing cover of the combined teachings of Ford et al, Schnegg, and Woodall, to prevent fraying that is caused by cut fabrics into their predetermined lengths prior to use, as taught by Vowles et al.

Ford et al, Schnegg, Woodall, Jr., and Vowles taken as a whole teach all that is shown above and that the filaments have a diameter of from about 5 to about 15 mils (col.7 l.52-55 in Ford et al), but fail to explicitly teach that the monofilament yarn comprises Nylon 6/6. However, Boyd et al teach that Nylons and specifically Nylon 6/6 is well known for its toughness and abrasion resistance (p.5, paragraphs 41 and 42). One of ordinary skill in the art would have recognized that Nylon 6/6 is a material that is well known in the art for having superior abrasion resistance, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select Nylon 6/6 as the material used to form the first weft in the fabric cloth of Ford et al and Schnegg, because Ford et al teaches an abrasion resistant tubular sleeve and Boyd et

al teaches that is well known in the art that Nylon 6/6 has superior abrasion resistance.

Ford et al, Schnegg, Woodall, Jr., and Vowles also fail to teach that the multifilament yarns are formed from stainless steel/polyester blends. However, Bettcher et al teach that multifilament yarns made from blends of stainless steel and polyester render the fabric highly cut resistant, nonabsorbent while being light in weight, stretchable, and flexible (col.1, l.53-63 and col.2, l.33-36). One of ordinary skill in the art would have recognized that a stainless steel/polyester blend multifilament is used to form abrasion resistant fabrics in order to provide the fabric with not only abrasion resistance but also cut resistance and nonabsorbancy, as taught by Bettcher et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a stainless steel/polyester blend multifilament yarn as the multifilament yarn used in Ford et al and Schnegg, in order to provide in addition to the abrasion resistance, cut resistance, and nonabsorbent properties, as taught by Bettcher et al.

Regarding claim 26, Ford, Schnegg, Woodall, Jr., Vowles, Boyd, and Bettcher et al taken as a whole teach all that is

claimed in claim 24 and that the fabric further comprises a set of placed warps including a plurality of yarns forming a lay-in stitch lap as shown above. Ford, Schnegg, Woodall, Jr., and Bettcher et al fail to teach that the lay-in warp yarn is polyester over polyethylene terephthalate monofilament yarn. However, Boyd et al teach that a monofilament is formed having a core of polyethylene terephthalate and a shell of polyester in order to improve certain physical characteristics such as abrasion resistance while maintaining other characteristics found in the ingredient employed without resorting to blends of more than one ingredient, which tend to not form strong bonds since they are not compatible in the same manner as two components of the same material (p.3, paragraph 21 and p.5, paragraph 38). One of ordinary skill in the art would have recognized that a monofilament of polyester over polyethylene terephthalate is substituted for monofilaments of polyester in order to improve certain physical characteristics such as abrasion resistance while maintaining other characteristics of the polyester without resorting to blends of incompatible materials, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to substitute a monofilament of polyester over polyethylene

terephthalate for the monofilament of polyester taught in Ford, Schnegg, and Woodall, Jr., in order to improve the abrasion resistance of the monofilament without resorting to blends with incompatible materials, as taught by Boyd et al.

Regarding claim 27, Boyd et al teach that it is well known in the art to form monofilament yarns having a Nylon 6/6 core or sheath and a polyester core or sheath respectively in order to form a filament that has improved properties over a single component monofilament. Nylon is specifically chosen because it has excellent abrasion resistance and toughness and the polyester is added in order to provide the monofilament with greater dimensional stability (p.1, paragraph 8). One of ordinary skill in the art would have recognized that a monofilament yarn used in the formation of an abrasion-resistant fabric would include an inner core of Nylon 6/6 and an outer shell of polyester in order to provide the filament with excellent abrasion resistance without sacrificing dimensional stability, as taught by Boyd et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the monofilament of Ford et al, Schnegg, and Woodall, having an inner core of Nylon 6/6 and an outer shell of polyester, in order to form the monofilament having excellent

abrasion resistance with enhanced dimensional stability compared to a single component Nylon 6/6 monofilament, as taught by Boyd et al.

Response to Arguments

10. Applicant's arguments regarding the 35 U.S.C. 112 rejections of record have been considered but are moot since the rejections have been withdrawn.

11. Applicant's arguments regarding the 35 U.S.C. 103 rejections of Ford in view of Schnegg, Woodall, and Vowles have been fully considered but they are not persuasive.

In response to Applicant's argument that Schnegg teaches selvage comprising weft yarns that are cut at their ends in contrast to the newly added limitation to the independent claims that the weft yarns pass uncut across the knitted warps. Schnegg teaches that the weft yarns "may" be cut at their ends with an adjacent chain stitch. By stating "may" the cut is an option between cutting or leaving uncut.

In response to Applicant's argument that there is no motivation to combine Woodall with Ford or Schnegg, Woodall, Jr. is nonanalogous art because Woodall, Jr. is reasonably pertinent to the particular problem with which the applicant is concerned.

Woodall, Jr. is concerned with forming a tubular sleeve that provides protection to an elongated body, in this case a orthopedic cast. One of ordinary skill in the art would have recognized that tubular fabric sleeves for protection of elongated bodies would have similar structure and would look to any tubular fabric sleeve and not just sleeves specifically for protecting cables and wires. Also, Woodall, Jr. is in the field of applicant's endeavor insofar as they are both in the field of forming tubular fabric sleeves. Woodall, Jr. provides motivation to combine with Ford and Schnegg, because it is reasonably pertinent to the particular problem applicant is concerned and teaches that texturing filaments forming a sleeve, provides the sleeve with enhanced cushion, which would be desired in protecting elongated objects such as cables and wires from damage.

12. Applicant's arguments regarding the 35 U.S.C. 103 rejections of claims 3, 6, 9, 13-24, and 26-27 over Ford, Schnegg, Woodall, and Vowles in various combinations with Boyd, Keogh, Stanhope, and Bettcher have been fully considered but they are not persuasive.

Applicant has relied on the arguments against the rejection on the broadest claim, so look above with regards to answers to those arguments.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Bruenjes whose telephone number is 571-272-1489. The examiner can normally be reached on Monday thru Friday from 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher P Bruenjes
Examiner
Art Unit 1772

CPB CPB
January 5, 2007

ALICIA CHEVALIER
PRIMARY EXAMINER